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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,084	11/29/2004	Ulrich Bast	2002P07513WOUS	9657

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EXAMINER	
NGUYEN, HOAI AN D	

ART UNIT	PAPER NUMBER
2858	

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/516,084	BAST ET AL.
	Examiner	Art Unit
	Hoai-An D. Nguyen	2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/29/04 (preliminary amendment)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-35* is/are pending in the application.

4a) Of the above claim(s) *27-34* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-26 and 35* is/are rejected.

7)☒ Claim(s) *15,17,18,20 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 15-26 and 35, drawn to apparatuses for detecting a crack in a metal component, classified in class 324, subclass 708.

II. Claims 27-30, drawn to a process of producing a sensing arrangement, classified in class 416, subclass 61.

III. Claims 31-34, drawn to a process for monitoring a turbine component using a sensing arrangement, classified in class 324, subclass 71.1.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the process as claimed could be used to make other and materially different product such as any convention probes.

3. Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP

§ 806.05(h)). In the instant case, the process for using the product as claimed can be practiced with another materially different product such as an oscilloscope or a network analyzer.

4. Inventions II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operation, one as a process of using a sensing arrangement and the other as a process of making a sensing arrangement.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Groups II or III, and vice versa, restriction for examination purposes as indicated is proper.

7. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

8. During a telephone conversation with Mr. John P. Musone (Reg. # 44,961) at 407-736-6449 on November 1, 2005, a provisional election was made without traverse to prosecute the invention of Group I, claims 15-26 and 35. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected inventions.

9. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

10. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

11. The abstract of the disclosure is objected to because it contains legal phraseology such as "said", and it contains more than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Objections

12. Claim 15 is objected to because of the following informalities: "fixidly" on line 2 should be replaced with -- fixedly --. Appropriate correction is required.

13. Claims 17, 18, 20 and 22 are objected to because of the following informalities: ":" after "consisting of" should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In this claim 26, the claimed feature, "the monitoring structure", has not been defined in its preceding claims 25 and 15. Accordingly, the claim 26 has not been further treated on the merits.

Claim Rejections - 35 USC § 102

16. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. Claims 15-20, 23, 24 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Ueda et al. (US 4,026,660 A).

Ueda et al. teaches a crack detecting means for rotor blades of rotary wing aircrafts comprising:

With regard to claim 15, a detector (FIG. 1, crack detecting circuit), adapted to detect a crack in a metal component (rotor blades), comprising: an electrical conductor (FIG. 1, sensor 3) having an electrical property and fixedly attached to the component and adapted to propagate the crack that initiates in the metal component through the metal component/conductor interface and into the conductor, a capacitor (FIG. 1, capacitor 8) electrically connected to the electrical conductor, and an electric circuit (FIG. 1, rotor blade, capacitor 8 and sensor 3) comprised of the component, the capacitor, and the electrical conductor wherein the cracks in the component produce a change in the electrical property of the electrical conductor so that a deviation in the electric circuit is produced (From column 1, line 46 to column 2, line 9 and column 2, lines 67 to column, 3 line 40).

With regard to claim 16, the electrical conductor (FIG. 1, sensor 3) functions as an emitter (transmitting a crack signal (or a change in inductance or capacitance) to the stationary section 2) and as a receiver (sensing/detecting crack signals (or a change in inductance or capacitance)) (Column 1, lines 41-45 and column 3, lines 41-50).

With regard to claim 17, the degradation of the component and the degradation of the electrical conductor is selected from the group consisting of deformation, removal of material, crack formation (when a crack is produced in the rotor blade), and crack propagation (transmitting crack signals) (Column 1, lines 36-40 and column 1, lines 50-54).

With regard to claim 18, the degradation of the component and the degradation of the electrical conductor is selected from the group consisting of deformation, removal of material,

crack formation (when a crack is produced in the rotor blade), and crack propagation (transmitting crack signals) (Column 1, lines 36-40 and column 1, lines 50-54).

With regard to claim 19, the electrical conductor (FIG. 1, sensor 3) has an electrical resonant circuit (FIG. 1, sensor 3, induction element 4 and capacitor 8) (From column 3, line 66 to column 4, line 13).

With regard to claim 20, the electrical conductor (FIG. 1, sensor 3) includes an electrically conductive conductor material (FIG. 1, sensor 3 in the form of an inductance, a conducting coil) selected from the group consisting of metallic conductors and ceramic conductors (Column 3, lines 7-8).

With regard to claim 23, the electrical conductor is arranged at a surface portion (FIG. 6A, rotatable disc 10) of the component and in the volume of the component (FIGS. 6A, 6B, 8A, 8B and 14 and column 4, lines 30-37).

With regard to claim 24, the electrical conductor is arranged at a surface portion (FIG. 6A, rotatable disc 10) of the component and in the volume of the component (FIGS. 6A, 6B, 8A, 8B and 14 and column 4, lines 30-37).

With regard to claim 35, a component (rotor blades) for high-temperature applications, a monitoring device (FIG. 1, crack detecting circuit) to record a crack in the component, and an electrically conductive monitoring structure (FIG. 1, sensor 3 included in movable section 1 of the crack detecting circuit) operatively associated with the component having a defined electrical property and not permanently electrically connected to the monitoring device such that the electrically conductive monitoring structure and the monitoring device form an electrical resonant circuit (FIG. 1, rotor blade, capacitor 8 and sensor 3), wherein the cracks in the

component cause cracks in the monitoring structure and produce a change in the defined electrical property of the monitoring structure so that it is possible to record a deviation in the property of the resonant circuit formed from monitoring structure and monitoring device as a result of the change (From column 1, line 46 to column 2, line 9 and column 2, lines 67 to column, 3 line 40).

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. Claims 21, 22 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. in view of a court decision about Art Recognized Suitability for an Intended Purpose according to MPEP § 2144.07.

Ueda et al. teaches all that is claimed as discussed in the above rejection of claims 15-20, 23, 24 and 35, but it does not specifically teach the following:

- A component material of the component and the conductor material of the electrical conductor have a mechanical property that is about the same.
- The mechanical property is selected from the group consisting of thermal expansion behavior and fracture toughness.
- The component is a heat shield of a combustion chamber.

With regard to claims 21 and 22, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the crack detecting means for rotor blades of rotary wing aircrafts of Ueda et al. to incorporate the teaching of using materials having the same mechanical property (thermal expansion behavior and fracture toughness: widely known by one skilled in the art) for both the component and the electrical conductor since such an arrangement is beneficial to provide a synchronous system that would have the same reaction under the same applied conditions for an intended use of the system since this either is what would be expected during the normal and intended use of the system of Ueda et al. or concerns conventional construction methods or alternative sensors, which one having ordinary skill in the art would apply according to the applied circumstances.

With regard to claim 25, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the crack detecting means for rotor blades of rotary wing aircrafts of Ueda et al. to incorporate the teaching of replacing the rotor blade with a heat shield of a combustion chamber since such an arrangement is beneficial to provide another desirable application for an intended use of the system since this is what would be expected during the normal and intended use of the system of Ueda et al.

Moreover, the features upon which applicant relies (i.e., using materials having the same mechanical property consisting of thermal expansion behavior and fracture toughness for both the component and the electrical conductor or the component is a heat shield of a combustion chamber) is not sufficient by itself to patentably distinguish over Ueda et al. In re Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink

would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol. "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.). This support can be found in MPEP § 2144.07, Art Recognized Suitability for an Intended Purpose.

20. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. in view of Bast et al. (US 5,647,667 A).

Ueda et al. teaches all that is claimed as discussed in the above rejection of claims 15-20, 23, 24 and 35, including detecting a crack in a metal component (rotor blade as disclosed from column 1, line 46 to column 2, line 9) but it does not specifically teach the following:

- The component is a heat shield of a combustion chamber.

However, Bast et al. teaches a method for testing a structural ceramic part to detect a crack (Column 2, lines 19-24) comprising:

- With regard to claim 25, the component is a heat shield of a combustion chamber (Column 6, lines 38-40).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the crack detecting means for rotor blades of rotary wing aircrafts of Ueda et al. to incorporate the teaching of detecting a crack in a heat shield of a combustion chamber taught by Bast et al. since Bast et al. teaches that such an arrangement is beneficial to provide a method for testing a structure to detect a crack in order to eliminate faulty parts having a crack size lying above a limit value as disclosed in column 2, lines 19-24.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant's attention is invited to the followings whose inventions disclose similar devices.

- Hayashi et al. (US 4,914,378 A) teaches a method and apparatus for inspecting surface defects.
- Watanabe et al. (US 6,686,750 B2) teaches a semiconductor integrated circuit device and IC card.
- Brossia et al. (US 6,911,828 B1) teaches an apparatus and method for detecting the degradation of a coating using embedded sensors.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai-An D. Nguyen whose telephone number is 571-272-2170. The examiner can normally be reached on M-F (8:00 - 5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hoai-An D. Nguyen
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